UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGIONS 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

August 29, 2006

Mr. Jerry C. Winslow
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Xcel Energy
414 Nicollet Mall (Ren. Sq. 8)
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REPLY TO THE ATTENTION OF:

SR-6J

RE: Comments on the Draft Remedial Investigation
Ashland/NSP Lakefront Superfund Site

Dear Mr. Winslow:

The United States Environmental Protection Agency (EPA) has completed its review of the draft Remedial Investigation (RI) submitted on behalf of Northern States Power Company/Xcel Energy by URS on June 5, 2006 for the Ashland/Northern States Power Lakefront Superfund Site. Our comments are provided below:

General Comments

1. The RI report has suggested that the wood chips found at various places are from historical lumber operations in the area. The coal gas manufacturing process utilized scrubbers and purifiers to remove tar and other residuals from the gas. Wood fibers/chips were utilized in the scrubbers to absorb tar and other residuals. Wood chips were also utilized in the purifiers as sorbent to trap some tar and other residuals. Due to close proximity to lumber operations it is quite likely that the process at the Ashland/NSP site utilized wood chips in their scrubbers and purifiers. The wood chips utilized in the scrubbers and purifiers would eventually load up with tar and other residuals and become unusable. At this point this material would require disposal. Many times the waste materials from MGP facilities were used for filling low lying areas by MGP facilities. At the Ashland/NSP site NAPL appears to be associated with the wood chips at several locations, suggesting that the NAPL source associated with the wood chips could be from disposal of wood chips from the MGP at the Ashland NSP site.

2. In the RI report for nature and extent of contamination the average and 95 percent Upper Certainty Limit (UCL) are compared to the Region III RBCs, Region IX PRGs and Wisconsin standards. The procedures utilized for the extent of contamination are not appropriate. For extent of contamination all analytical results should be compared to the regulatory standards and the samples exceeding any regulatory standards should be utilized to determine extent of contamination.

3. The fate and transport of contamination cannot be completely evaluated because the RI report has compared the regulatory standards to 95% UCL and average concentrations.

4. The extent of contamination and conceptual model should address wood chip process waste described in Comment 1 above.

5. Previous investigation carried out by Northern States Power of Wisconsin (NSPW) and WDNR produced a significant amount of analytical information. Field work conducted under this investigation was based on a data gap analysis and the purpose was to "fill in the gaps" to complete the RI and FS. The Draft RI and supporting documents seem to focus on 2005 data and do not incorporate the historic baseline information. Past work conducted in completing the Ecological and Human Health Risk Assessment and past analytical results should be assimilated into this document.

   The foundation of the RI Report should be our understanding of the site conditions and should be reflected in the conceptual site model. The historical sources of contamination, contaminant transport and distribution patterns need to be clearly and accurately portrayed in the model. Although some minor other sources may have contributed to the site contamination, the major source of site related contaminants is the historic operation and waste disposal practices of the manufactured gas plant. Clear reference to discharge through the ravine prior to filling and later through the pipe systems needs to be addressed.

   - Contaminant volume estimates are referred to throughout the RI report as well as in the support documents. What were the methods used and where are the calculations that support these estimates? Specifically, any volumetric estimate needs to consider what contaminant concentration is indicative of NAPL, the size of the areas and percent of pore space containing free product vs. water.

   - It appears as if the RI failed to address all of the manufactured gas plant wastes on the site and this need to be discussed. The expected waste streams need to be presented to allow the reader to understand the site contaminants. What waste products were generated during the production process? How were the waste products handled, stored or disposed of? What was the nature of the waste, liquid, ash or solid? Where was waste from the buildings disposed of? How much of the wastes were used to fill in the ravine and or Kreher Park?

   - The primary contaminant source for this site is the MGP. Free product MGP liquid wastes have migrated from the site through both man made and natural conduits. The transport mechanism from the surface to the Copper Falls aquifer has not been determined. It may have been downward migration through the soils or through a man made conduit (i.e.: excavation or piping). Discharges to the ravine have caused free product to be present throughout the length of the ravine. The transport mechanisms need to be corrected in the RI report. Soil boring advanced by NSPW; B-1, B-20, B-21, and B-22 (Dames & Moore August 1, 1995) all encountered free product within the ravine north of St Claire Street. Transport to the historic lake bed and Kreher Park were through the ravine and then through pipes and the ravine fill. Many pipes have been found during the various phases of investigation, some may have been removed prior to the investigations taking place. The Greeley & Hanson drawings of record note a pipe leading from the MGP to the "Tar Dump". That pipe was not found during the investigations and may have been removed prior to investigation.

- It appears that sometime after the closure of the Schroeder Lumber Company's operations (1930) a waste tar pond started to form near the mouth of the ravine. Tar dumps were not uncommon at carbureted water gas plants and were used as a method to decant the water and lighter volatiles off of the heavier tars. The layout of a pipe to a waste tar dump, the dump area itself and a culvert from the dump area to the lake is consistent with this scenario, fits the drawings of that time, and is supported by the visual and analytical results of the investigations. Further, this scenario fits many of the eye witness observations and fits into the timeline of those eye witnesses.

- The use of the average and 95% UCL should be dropped and the actual results should be applied throughout the documents.

- An attempt needs to be made to reflect that wood waste has been deposited on top of the contamination within large areas of the lakebed. A sediment map should address the contaminant concentration and areas where free product has been noted without tying it to the depth of the wood waste on top of it.

- The RI attempts to minimize the areas containing free product in Kreher Park. Given that all but 2 of the 2005 test pits in Kreher Park indicate the presence of NAPL please explain why the figures and narrative do not reflect that? Any map or discussion of NAPLs in an area needs to reflect all of the sampling (including test pits) conducted in that area over all of the investigation phases.

6. For depicting extent of contamination, several figures have been developed in the RI. The figure has depicted extent of contamination using ranges of concentrations. The range of concentrations has been randomly picked. Normally to depict extent of contamination on the figures the samples are compared to regulatory standards and the results exceeding regulatory standards are utilized to depict extent of contamination for each media.

7. For depicting extent of contamination include tables comparing constituents detected with the regulatory standards.

8. The report indicates that the volume of coal tar generated during the life of the MGP is significantly less than the volume in the sediments. Section 4.1.3 states that observations of free product in the sediments have not been as accurately measured, due to limited offshore sampling methods. Therefore, what assumptions were used to generate these two numbers and where are they documented?

Specific Comments

1. **Section 1.2.2, Site History:** The site history currently starts with the history of the Kreher Park area. While the Kreher Park narrative is important, it may cause confusion since the historic MGP is a major source of contaminants at the site. It would seem the historic operations of the MGP should start the site history section and the narrative should move through the site from that point.

The Kreher Park history should be based on documented evidence. While "eye witness" accounts may suggest a recollection of a tar pond and wood treatment taking place in the area, there are contradictory eye witness reports that suggest wood treatment did not occur. Further, the analytical results from these investigations do not yet support wood treatment taking place. It can be mentioned in the narrative that wood treatment may have taken place but this has not been substantiated.

It is clear from newspaper articles that the John Schroeder Lumber Company saw mill ceased operations around 1930.

The MGP history does not discuss the 1902 City Ordinance requiring MGPs within the city to convey their wastes underground. In light of the ordinance, it would seem appropriate to include a discussion of how material waste was conveyed and how that might tie to the 12" clay tile pipe.

The history section should include a discussion of the information obtained from the Browns Directories and the Wisconsin Railroad Commission documents.

2. **Section 3.1 - *Regional and Site Geology*:** The Miller Creek Formation thins to 4 foot thick at the base of the ravine not 7 as noted in the narrative.

   As documented in excavations and borings the ravine fill materials consist of both liquid and solid MGP wastes.

   It should be stated that surface water at the seep contained dissolved phase and free product MGP wastes rather than "elevated concentrations".

   It should be stated that the 12" clay tile pipe was acting as a conduit for the transport of both dissolved phase and NAPL from the MGP to the seep area.

   Some discussion of the interaction between the lake level and the water levels within the lake bed fill of Kreher Park should be included.

3. **Section 3.2:** In this section it is stated that fill in the ravine includes ash, cinders, steel and wire. Wood chips were also found at several locations in the upper bluff. Revise this section to address wood chips.

4. **Section 3.2 – *Surface Water Hydrology*:** It should be noted in the narrative that although it is not known whether the MGP, the City or others installed the clay tile pipe system, contaminants consistent with the MGP wastes have been detected along the full length of clay tile pipe and open sewer to the lake.

   It appears that the mode of contaminant transportation to the lake included discharge through:

   - From the MGP through the ravine to the lake prior to the lake bed fill covering the mouth of the ravine;

- From the MGP through the 12" clay tile pipe either to the lake bed prior to filling and/or through the extended piping system towards the open sewer;
- Through the 2" pipe to the waste tar dump as depicted in the Greeley & Hanson drawings of record, then through the culvert to the lake or;
- Other possible scenarios.

5. **Section 3.4:** This section needs to be revised once the sediment stability report has been finalized.

6. **Section 4:** This section does not include a table that lists the comparison criteria for each detected contaminant by media. The comparison criteria are included in the various statistical summary tables; however, this does not present a comprehensive list in one location. It is suggested that such a table be included in the RI.

7. **Section 4:** This section presents data in terms of means and 95% UCLs. This is not a typical approach to a RI and does not present an accurate nor complete picture of the contaminant distribution. In many instances, the 95% UCL has been calculated from datasets with as little as one detection. This approach is not acceptable because it provides a skewed result to the reader because sample results are diluted. Each soil, sediment, and groundwater data point has not been directly compared to regulatory standards and then presented. The statistical approach for determining extent of contamination should not be utilized.

8. **Section 4.1.1 – *Ravine Fill*:** This section presents the results of the geoprobe investigation of the fill in the vicinity of the NSPW Garage. Based on the boring logs in Appendix B, the information on Table 4-1 and Figure 4-1, the extent of free product contamination has not been defined. The following are comments relating to the extent of free product determination in the ravine fill:

    - GP105, GP112, GP121, GP132, GP135, and GP136 either refused at a shallow depth, or were terminated at a relatively shallow depth. Based on the observations of the surrounding borings, it is likely that the depth of the free product was not reached in this list of borings. The result is that the lateral and vertical extent of contamination cannot be determined at these locations. In particular, this focuses on the southwest portion of the free product delineation as shown on Figure 4-1.

    - Free product was identified at both GP116 and GP117; however, borings have not been advanced to the west of these locations. Therefore, the western extent of free product has not been delineated.

    - Boring GP131 is identified on Table 4-1 as containing free product; however, it is not included within the green line on Figure 4-1.

    - The southern extent of free product contamination has not been defined. GP131, GP134 and GP128 indicate the presence of free product; however, no borings south of these locations have been advanced.

- Free product was identified in GP107; however, this point has not been included within the green line on Figure 4-1. Additionally, to the east of this area, the extent of free product has not been defined (east of GP106 and GP107).

- The extent of free product cannot be fully assessed at GP103.

Based on the above bullets, it is likely that additional investigation will have to be conducted prior to designing any remedy in order to fully delineate the extent of free product in the upper bluff/ravine area.

Therefore, more discussion is needed regarding the free product that was encountered over the full length of the ravine from the MGP (alley) to the mouth of the ravine. This has been documented through soil borings conducted by Dames & Moore (now URS) in 1995. (Borings B-1, B-20, B-21 and B-22)

In addition, more discussion of the role the 12" clay tile pipe played in contaminant transport needs to be added.

9. **Section 4.1.2 – *Kreher Park*:** The text in Section 3 indicates that the test pit investigations found free product to be extensive throughout Kreher Park. In addition, historic test pits excavated throughout the park indicated free product of both LNAPL and DNAPL. Free product was not isolated and was found in all but 2 of the 2005 test pits. This section needs to at least summarize the results from the test pit investigations, and draw an overall conclusion regarding the extent of free product contamination.

10. **Section 4.1.2 – *Kreher Park*:** The text indicates that free product has been delineated in both the area to the north of the seep, and in the area of TW-11. North of the seep, free product has been encountered in most of the borings advanced in this area. Borings outside of this free product area have not been advanced to prove that the free product is limited to the outline shown on Figure 4.2. Therefore, the extent of the free product north of the seep has not been delineated, and it appears that further sampling is likely to be needed during design to define the extent of (this) free product.

11. **Section 4.1.2 – *Kreher Park*:** Near TW-11, Figure 4-2 shows GP146 to be outside of the free product zone; however, based on Table 4-1, GP146 contained free product, and as such should be included inside the blue outline. The extent of free product has not been defined in this area, based on the presence of free product at the outermost borings: GP139, GP144, and GP146. Although this area may have access considerations that may limit sampling, it appears that further sampling is likely to be needed prior to designing any remedy to define the extent of free product.

12. **Section 4.1.3 – *Sediments*:** It needs to be clarified that most of the NAPL within the sediments appears to be associated with the pre-fill lake bed sands. Clean wood waste fill appears to have migrated over the top of the NAPLs.

13. **Section 4.1.4 – *Copper Falls Aquifer*:** The free product evaluation in this section needs some clarification. Table 4-2 lists wells where free product has been encountered. One thing that is not explicitly stated in this section is whether or not each and every well was

measured for the presence of free product. For instance, if MW-5A/5B were not measured for free product, then the presumption could be that free product might be located there and the extent would not be defined at this location. Please clarify.

14. **Section 4.1.4 – *Copper Fall Aquifer*:** There is no lateral control on the extent of free product to the east of MW-21A/B, roughly parallel to the bluff face. In this area, MW-20A is upgradient and MW23A/B is downgradient of MW-21A/B. The result is that this area has not been fully characterized with respect to the extent of free product.

15. **Section 4.2.1 – *Metals and Inorganics*:** The statement following the bullets indicates that the arsenic (and lead) values represent urban background conditions. However, based on the data presented in the bullets, the upper bluff surface soil sample concentrations of arsenic are considerably higher than the arsenic concentrations in the background soil samples. The upper bluff arsenic concentrations can therefore not be attributed to background conditions. Arsenic is also associated with waste streams from MGPs.

16. **Section 4.2.1 – *Organics*:** The statement is made that the low levels of organics represent typical urban background conditions. However, the presence of VOCs and SVOCs that are directly related to the site contamination cannot be considered typical of background conditions.

17. **Section 4.2.1 – *Surface Soils*:** It is difficult to understand the use of the average and 95% UCL. Please explain. Comments to the HHRA regarding surface soil sampling should be addressed in this section.

18. **Section 4.2.2 – *Subsurface Soils/Upper Bluff* – Metals and Inorganics and Figures 4-6 and 4-7:** The arsenic concentrations shown on Figure 4-6 indicate that arsenic contamination has not been delineated. Sample GP-110 is identified to have a concentration of 4,000 mg/kg of lead; however, this sample is not shown on Figure 4-7. A figure has not been presented to identify the locations of the iron exceedances in the subsurface soil.

19. **Section 4.2.2 – *Subsurface Soils/Upper Bluff* - Organics:** The toluene detections do not appear to be comparable to the Wisconsin RCL. The one detection of toluene at 9,000 ug/kg is considerably greater than the RCL of 1,500 ug/kg; this is not comparable. This also indicates that there is likely to be toluene contamination in the background soils. This section also indicates that numerous VOCs and PAHs exceeded regulatory criteria; however, only benzene and naphthalene have been discussed. The RI must present and discuss all of the exceedances.

20. **Section 4.2.3 – *Surface Soils/Kreher Park* – Metals and Inorganics :** The text indicates that iron was found to exceed a Wisconsin RCL; however, a figure of iron exceedances has not been presented. Therefore, the extent of iron contamination can not be evaluated.

21. **Section 4.2.3 – *Surface Soils/Kreher Park* – Organics:** This section needs to address each of the PAH constituents that were found to exceed regulatory criteria.

22. **Section 4.2.4 – *Subsurface Soils/Kreher Park:*** We do not agree with the statement that *"This disparity between PAH concentrations between the upper bluff/filled ravine and Kreher Park soils is an indication of the usage of higher concentrations of PAH-based compounds at the lakefront during industrial activity (e.g., wood treatment) compared to those used at the former MGP"*. These differences in PAH concentration can be a reflection of the varying MGP process, process inputs, process area of the waste stream, transport mechanism, weathering over time and environment. Other spills of product or waste in the tank car area may have contributed to the make-up of the waste. Other, unknown sources may have had minor contributions. Please clarify.

23. **Section 4.2.4 – *Subsurface Soils/Kreher Park* - Organics:** All of the VOCs and PAHs (or SVOCs) found to exceed regulatory criteria need to be presented and discussed.

24. **Section 4.3.1 – *Upper Bluff/Filled Ravine – Metals and Inorganics – Upper Bluff:*** This section indicates that certain metals were detected at low percentages, etc. However, this section does not identify the extent of contamination for arsenic, for example. The fact that arsenic has a very low regulatory standard, and that it may (or may not) be attributed to arsenic soil background concentrations does not preclude the need to characterize its extent. This must be accomplished for each of the metals identified to have exceeded regulatory standards.

25. **Section 4.3.1 – *Upper Bluff/Filled Ravine – Metals and Inorganics – Filled Ravine:*** The statistical summary does not define the extent of contamination in the shallow groundwater. If the intent is to identify the entire ravine as contaminated with certain metals and cyanide, then this must be spelled out and backed up with supporting figures identifying detected concentrations.

26. **Section 4.3.1 – *Upper Bluff/Filled Ravine – Organics – Filled Ravine:*** This section mentions that "other BTEX and PAH compounds also exceeded" regulatory standards; however, these are not identified. The extent of contamination needs to be identified for all of the organics found to exceed regulatory standards.

27. **Section 4.3.1 – *Upper Bluff* and Section 4.3.2 - *Kreher Park:*** Groundwater (and NAPL) has historically moved from the ravine area to the filled lake bed area. Although the 12" clay tile pipe has been removed as a transport mechanism and EW-4 installed, there has been no study to determine the effectiveness of this interim measure to act as a barrier for groundwater migration through the fill material to Kreher Park. As such the upper bluff, ravine and Kreher Park have to be looked at as being connected.

28. **Section 4.3.2 – *Kreher Park:*** This section needs to identify the extent of contamination for all of the constituents (inorganic and organic) found to exceed regulatory standards. If this is to be interpreted as the entire area of Kreher Park, then this needs to be stated as such. In the organics discussion, the statement regarding the higher concentrations of PAHs in soil is out of place. In this same paragraph, the statement is made that the PAH constituents are widespread throughout Kreher Park, based on the statistics. This evaluation should be conducted on a direct comparison of concentrations to regulatory standards.

29. **Section 4.3.3 – *Copper Falls Aquifer*:** This comment pertains to groundwater flow within the Copper Falls aquifer, and as such, pertains to Section 3 as well as all other sections dealing with flow and contaminant transport through the Copper Falls aquifer. The Copper Falls aquifer has been described in the RI as semi-confined near the NSPW, and confined underneath the rest of the site to the north. The RI also indicates that there are vertical gradients in the up direction beneath much of the site. Additionally, the RI indicates that groundwater flow in the Copper Falls aquifer converges in the area of Kreher Park. These are apparently the bases to justify that contamination in the Copper Falls aquifer is stagnant and not migrating further.

    The vertical gradients in the Copper Falls aquifer are based on head differences of greater than 10 feet in some instances, and do indicate that upward groundwater flow is likely. Based on observations in the boring logs of the deeper Copper Falls wells it is apparent that zones or perhaps lenses of finer grained material are present in this hydrostratigraphic unit that are serving to increase the pore pressures of the deeper aquifer zones within the Copper Falls. The result is that higher heads are evident in the deeper aquifer zones. Similarly, it is likely that lower permeability zones in the Copper Falls aquifer are associated with the elevated heads in the near-shore monitoring wells (MW-24A, MW-25A, and MW-26A). Despite these elevated heads, it is unlikely that hydrostatic pressures would prevent groundwater, and therefore contaminants, from migrating further through the Copper Falls aquifer. The RI implies that groundwater does not migrate past Kreher Park in this aquifer and that these flow conditions mitigate contaminant migration, which is not the case. Lake Superior is without a doubt the ultimate discharge point for the Copper Falls aquifer. To further support that contaminants do and will migrate past the Kreher Park area is the fact that organic contaminants have been detected in wells MW-24A, MW-25A, and MW-26A. The one thing that is not known is how far into the lake the Copper Falls aquifer intersects the lake bottom, and analogously, where contaminants would discharge to the lake. However, such information is not likely to be of great value to the RI at this point, as it appears that only trace to low concentrations of VOCs have been detected along the Lake Superior edge in the Copper Falls aquifer.

30. **Section 4.4 – *Sediments and Surface Water*:** Although an attempt was made to collect a surface water sample apparently after a slick even had subsided, it is evident that the NAPL contamination within the sediments is not stable. Slicks at the site are reported during wave events and are evident during and after "ice out". These releases, or instability of the sediments, needs to be discussed in the narrative.

31. **Section 4.4.1 – *Sediments – Metals and Inorganics*:** As in other sections, the comparison to regulatory standards should be made for each individual result, as opposed to the mean or 95% UCL of each constituent. It is unclear if any of the inorganics exceeded TECs. The statement is made that statistics were not computed for cyanide and selenium for the reference locations. This is somewhat misleading; a better way to state this is that cyanide and selenium were not detected in any of the samples collected at the reference locations. The fact that the BERA indicates other metals or inorganics are not COPCs is inconsequential in this section. The nature and extent section needs to focus on the detections, as opposed to their potential effects on the environment.

32. **Section 4.4.1 – *Sediments – Organics – VOCs – and Figures 4-23 and 4-24*:** This section does not identify were exceedances of VOCs occurred in the sediment. Although it is apparent that VOC concentrations decline with distance from the shoreline, it is not clear if concentrations are below regulatory standards at the outermost sediment sampling locations.

33. **Section 4.4.1 – *Sediments – Organics – PAHs – and Figures 4-25 through 4-27*:** It is unclear what the numbers on Figure 4-25, next to each of the sediment sampling location dots, signify. Please clarify. Based on Figure 4-25 and Figure 4-26, it appears that one point (in yellow) exists at an outer sampling location, indicating that the extent of PAHs is not completely defined in the 0 to 4 ft depth (based on a TEC of 1.61 mg/kg).

34. **Section 4.4.2 – *Surface Water*:** The text indicates that a few heavy molecular weight PAHs were detected above regulatory standards. Where was this one sample collected (should be shown on a figure), and which compounds were detected above the regulatory standards?

35. **Section 4.5.2 – *Evaluation of Indoor Gas Intrusion*:** It stated that several iterations of the Johnson and Ettinger model were performed using the soil gas data collected from the vapor probes at the site. Provide the modeling iterations and results in the RI.

36. **Section 4.5.3 – *Indoor Air Sampling Results*:** This section states that solvents are likely to have been in use at the site facility building during the indoor air sampling. Can the NSPW document the use of chlorinated solvents in their daily routine? If not, then the indoor air sampling results need to be re-evaluated.

37. **Section 5.0 – *Contaminant Fate and Transport*:** The exclusion of metals in the F&T discussion is not an acceptable approach. The text indicates that the metals are associated with background conditions or were detected at such low levels that they are not COCs. Assuming that the background samples are representative of background conditions and the statistical comparisons are valid, the fact remains that some of the metals were still found at levels above background. Therefore, metals and inorganics should be addressed in the fate and transport discussion.

38. **Section 5.0 – *Contaminant Fate and Transport*:**
    - The report needs to reflect that NAPL was/is present from the MGP to the mouth of the ravine and that the ravine itself, and later through pipes, acted as a transport route.
    - The contaminants in the sediments have not "penetrated the sediments" but rather wood waste has been deposited on top the contaminated sediments
    - Although some minor other sources can not be ruled out, the investigations over the years have allowed for an understanding of the sources, transport and fate of the COPC at this site.
    - It is likely that the clay tile piping system was installed and extended over time by the MGP operators in response to the City of Ashland 1902 ordinance requiring MGPs to convey wastes underground. Any footnote or reference to that ordinance should

correctly portray it. The ordinance was directed at MGP wastes. There is no evidence that the piping was part of a larger "city sewer network".

- Any reference to NAPL volume estimates needs to be supported with the calculations. As past comments on this issue have noted, the percent of pore space filled with NAPL or water needs to be discussed. We believe that the "estimates" greatly exaggerate the volumes of NAPL in the various areas of the site and may not accurately represent the site conditions and volumes of NAPL present.
- A conclusion that *"No continuing releases of free-product have occurred since the latest active industrial operations ceased in 1947 with the closing of the MGP. Consequently, the continuing release of contaminants to the environment has likely approached equilibrium conditions"* cannot be supported. Some downward migration continues within the Copper Falls aquifer as witnessed at the MW-4 well nest, whether it is through a man made conduit or naturally through the soils has yet to be determined. A clear hydraulic connection between the Kreher Park lake bed fill and the open lake/sediments has been documented. Slicks indicate transport from the sediments to the open water of the lake. No evidence has been produced to show the lack of a connection between the ravine and the lake bed fill.

39. **Section 5.0 – *Contaminant Fate and Transport*:** This section does not address the fact that the shallow groundwater, within the fill zone of Kreher Park, will discharge to Chequomegon Bay. Similarly, the RI indicates that the pressures of groundwater in the Copper Falls aquifer have restricted the flow of the plume; however, as discussed in a prior comment, there is no doubt that Lake Superior is the discharge point for the Copper Falls aquifer, and therefore the contaminants within it. These pathways need to be addressed in the fate and transport discussion.

40. **Section 5.0 – *Contaminant Fate and Transport*:** This section indicates that the free product within the Copper Falls aquifer is not likely to migrate further, in part due to natural conditions, and in part due to the extraction system. One possibility that has not been addressed is that a DNAPL may already be present at depth in or near the NSPW source area. This is based on the elevated total VOC concentration found in MW-9C. All arguments in the RI lead the reader to believe that upward flow is controlling the distribution of the free product and associated dissolved plume. But this does not account for the presence of VOCs at elevations down to 480 ft MSL (MW-9C), as well as lower concentration detections in MW-2C at 440 ft MSL. Regardless of flow gradient, a DNAPL will be able to flow straight down against the gradient and will be able to act as a source of dissolved VOCs at these deeper depths. This needs to be addressed further in the fate and transport section and it also raises the question, is the extent of contamination in the Copper Falls aquifer defined at depth?

41. **Section 5.1 and Appendix D4:** It is stated in this report based on the free product analysis from the Copper Falls aquifer benzene and naphthalene is the primary constituents. Based on results presented in Appendix D4, this appears to be based on the sample collected from EW-1 which was analyzed for VOCs, SVOCs and metals. Also, COC for this sample identifies this sample to be a groundwater sample and a remark has been made that there was a strong fuel odor and free product in EW-1. Also in Appendix

D4, two oil samples have been provided which has been identified as oil samples in the COCs. The oil samples were analyzed for VOCs and selected metal constituents. Based on the review of the analytical results of EW-1, and oil samples (D1 and D4), the results for VOCs in oil is a thousand times higher than EW-1. This suggests that samples from EW-1 were groundwater samples probably collected from a close proximity to NAPL. Therefore, the concentrations in the sample most likely represent concentrations of dissolved constituents in the groundwater in the vicinity of the NAPL. Therefore, the primary constituents list should be expanded to include constituents that exceed regulatory standards.

42. **Section 5.2 – *Potential Routes of Migration/Contaminant Transport Processes:*** This section addresses the migration pathways that have distributed free product throughout the investigation area. This section does not address the potential migration pathways that would convey contaminants now and in the future. This is related to the fact that the RI contends that contaminants are not migrating, which is not likely to be the case. Dissolved constituents will move through advection and dispersion in the groundwater media, and free product (DNAPL) as mentioned above, is still likely to migrate through permeable media (Copper Falls). The migration of contaminants in groundwater, as well as other media, needs to be discussed in this section.

43. **Section 5.3 – *Contaminant Distribution and Trends:*** The paragraph addressing MW-1(NET) indicates that there are steady state conditions in the shallow aquifer in Kreher Park. This statement is based on the consistently high detections of benzene in MW-1(NET). This well is located within the Former Coal Tar Dump and consistently high results should be expected as contamination in the form of free product is still present in this area and serves as a persistent source. This does not mean that the area is under steady state conditions; it just means that high concentrations are consistently detected in this well. Similarly, the following paragraph indicates that MW-2B(NET) is at the leading edge of the plume, with a total VOC concentration of greater than 38,000 ug/L. This concentration is more indicative of the center of a plume, not of a leading plume edge. Additionally, there are no downgradient wells from MW-2B(NET), therefore, it cannot be determined if this is the extent of contamination (wells MW-25A and MW-24A are about 450 ft apart and not considered to be directly downgradient).

44. **Footnote 45:** The foot note indicates that results have been inadvertently reversed in wells MW-2A(NET) and MW-2B(NET). Consider fixing this in the database and on the figures to avoid presenting potentially misleading graphs (Figure 5-5).

45. **Section 5.3 – *Contaminant Distribution and Trends:*** The last paragraph in this section lists MW-2C, which is a typographical error - it appears this should be MW-9C.

46. **Section 6.0 – *Conceptual Site Model:*** This section essentially summarizes the history of the site and presents how free product was transported. This section omits any discussion of the existing or potential contaminant migration pathways, such as through groundwater, from soil to groundwater, from groundwater/soil to vapor, etc. The CSM should present enough information for the reader to identify how contaminants migrate at the site. One suggestion is to include a series of block diagrams that show the development of the site through time. For example, the first diagram might show the

MGP site discharging wastes through the open ravine directly to the Bay; the next diagram might show the lumber operations and filling occurring in the former Bay. The last diagram should present the current conditions and all of the migration pathways. Another aspect to the CSM is to consider listing and discussing the potential receptors based on the exposure routes.

All comments need to be incorporated into a revised RI report. This should produce changes in the conceptual site model.

47. **Table 2-3:** Summary of Groundwater Sampling Field Parameters - A number of the conductivity measurements from March 2005 appear to be in units of mS/cm, instead of uS/cm. Therefore, they appear to be 1000 times too small. Please verify and change as appropriate.

48. **Figure 1-3:** Add the clay tile pipe that runs from the MGP to the mouth of the ravine.

49. **Figure 3-3**: The northern most contaminant concentration shown is at MW-2A/2B in the Copper Falls aquifer. The concentration lines have been terminated just beyond this well cluster; however, there is no data further downgradient to show that the concentrations decline this close to the well. At a minimum, the isoconcentration lines should be extended further to the north and dashed to identify interpretation.

50. **Figure 3-3:** There is no basis shown on this figure to curl the left-most (northern) edge of the 610 ft contour to the top of the Copper Falls aquifer. Nor to show a flow line pointing toward the south (see also Section 4.3.3. comment).

    Also, Add DNAPL along the complete base of the ravine (based on historical samples, D&M borings 1995). DNAPL in the Copper Falls Aquifer should be extended out to the MW-4B screen.

51. **Figure 3-7:** The head in MW-13B is shown to be 623.45, yet this elevation falls between the 620 and 621 isocontours. The isocontours should be redrawn accordingly.

52. **Figure 4-1:** DNAPL in the filled ravine should extend the full length of the filled ravine. D&M Borings, excavations and extraction well results.

53. **Figure 4-2:** NAPL should be depicted at all locations (borings, test pits and wells) where NAPL was detected in any/all samples. All but 3 (or is it 2) test pits in Kreher Park indicate NAPL yet neither the figures nor narrative reflect that.

54. **Figure 4-4:** This figure presents arsenic detections in soil by detected ranges. The apparent intent of this and subsequent figures is to present the extent of contamination in the various surface and subsurface soils. However, the concentration ranges neglect the regulatory standards. For instance, in Figure 4-4, the lowest range is from 0.0 (presumably non-detect results) to 1.4 mg/kg, but the Wisconsin standard for arsenic is 0.039 mg/kg. Therefore, it is not feasible to identify the samples that are less than the Wisconsin standard, and consequently the extent of contamination cannot be accurately depicted. This comment pertains to each of the figures that show contaminant

concentration ranges in section 4. These figures should be revised and should also include the actual defined extent of contamination with solid and dashed lines where the extent is not fully defined.

55. **Figure 4-10:** Based on the elevated detections of arsenic, in SS-2, SS-4, and SS-7, for example, the extent of arsenic in surface soils has not been fully characterized. Additional sampling is likely to be required to complete the extent characterization.

56. **Figure 4-14:** The extent of arsenic contamination does not appear to be delineated at the base of the filled ravine. Depending on the actual concentrations of arsenic in samples near the WWTP as compared to regulatory criteria, arsenic may also not be delineated in this area.

57. **Figure 4-15:** The extent of lead contamination may not be delineated. This depends on the regulatory criteria used as a comparison criteria. If a value of 50 mg/kg is used, then lead is not delineated near TP-1 and TW-12, and to the north of these locations.

58. **Figure 4-16:** The benzene concentrations are not delineated near TP-1, TP-4, TP-5, TP-8, and TW-1. Similarly, on Figure 4-17, naphthalene does not appear to be delineated at a number of different boring/sampling locations.

59. **Figure 4-23 through 4-27:** Rather than depict the contaminant concentrations related to depth of sediment, please depict it based on the elevation of the historic lakebed.

60. **Appendix A:** The RAO should address free product including smear zone in the upper bluff, Kreher Park and Bay area.

61. **Appendix A:** The RAOs should be revised to address revisions to the RI, Human Health Risk Assessment and Ecological Risk Assessment. Thorough review of the RAOs will be performed once the Human Health Risk Assessment and Ecological Risk Assessment are in good shape.

If you have any questions or would like to discuss things further, please contact me at (312) 886-1999.

Sincerely,

Scott K. Hansen
Remedial Project Manager

cc: Dave Trainor, Newfields
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